PALAEONTOLOGICAL IMPACT ASSESSMENT REPORT

PROPOSED PEDDIE PHOTOVOLTAIC FACILITY

Peddie, Eastern Cape Province of South Africa

Farms: Van Wyksvlei Settlement F30, Spitzkop F51, Kelham F31 and Communal Land in the Ngqushwa Municipality within the Amatola District Municipality

Developer: INNOWIND (PTY) LTD

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10 November 2011

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EXECUTIVE SUMMARY

The development of a Photovoltaic (PV) Facility near Peddie in the Eastern Cape is an initiative of InnoWind (Pty) Ltd. Coastal and Environmental Services (CES), as part of the Heritage Impact Assessment, commissioned this Palaeontological Impact Assessment. The purpose of this Palaeontological Impact Assessment is to identify exposed and potential palaeontological heritage on the site of the proposed development, to assess the impact the development may have on this resource, and to make recommendations as to how this impact might be mitigated.

The proposed development sites are on facilities on the farms Van Wyksvlei Settlement F30, Spitzkop F51, Kelham F31 and Communal Land, located on the western side of the R345 approximately 7 km north of Peddie Town in the Eastern Cape. The proposed photovoltaic parks are anticipated to produce up to 19 MW of electricity. The installations' footprints are approximately: i) PV 1 - 64ha; ii) PV 2 - 51ha; iii) PV 3 - 44ha; and PV 4 - 45ha. The energy generated will be fed into the Eskom grid via the local Eskom substation.

A basic assessment of the topography and geology of the area was made by using appropriate geological (1:250 000) maps in conjunction with Google Earth. A review of the literature on the geological formations exposed at surface in the development site and the fossils that have been associated with these geological strata was undertaken. A site field investigation was conducted on 19 September 2011, with the aim to document any exposed fossil material and to assess the palaeontological potential of the region in terms of the type and extent of rock outcrop in the area.

The Peddie development is underlain by the Permian Koonap Formation of the Adelaide Subgroup (shale, grey mudstones and sandstones). The Koonap Formation is interpreted as transitional brackish lacustrine to fluvial greenish grey sandstone, grading upwards into fine-grained siltstone and mudstone.

The field investigation confirms that the development site is dominated by rolling hill topography and underlain by sedimentary rocks of the Koonap Formation, with outcrop limited to road cuttings. There is a high potential for fossil material in the underlying mudstones that could be uncovered during excavations.

The Koonap Formation has a high palaeontological sensitivity rating. Through adequate monitoring and mitigation measures during excavations, the high impact severity can be lowered to beneficial. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) will be a beneficial palaeontological impact.

It is recommended that a collection and rescue permit be obtained from SAHRA prior to construction. That all earth-moving activities with potential impact on the Koonap formation be monitored by a palaeontologist. That a monitoring report be submitted to SAHRA after the completion of the earth works phase. That the resident ECO be trained by a professional palaeontologist in the recognition of fossil material. If fossil material is later discovered it must be appropriately protected and the discovery reported to a palaeontologist for the removal thereof.

SIGNIFICANCE RATING							
Rock Unit	**Temporal Scale**	**Spatial Scale**	**Degree of Confidence**	**Impact Severity**		**Overall Significance**	
				With mitigation	**Without mitigation**	**With mitigation**	**Without mitigation**
Koonap Formation	permanent	international	possible	beneficial	very severe	beneficial	high negative

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1. INTRODUCTION

The development of a Photovoltaic (PV) Facility near Peddie in the Eastern Cape is an initiative of InnoWind (Pty) Ltd. Coastal and Environmental Services (CES), as part of the Heritage Impact Assessment, commissioned this Palaeontological Impact Assessment. The purpose of this Palaeontological Impact Assessment is to identify exposed and potential palaeontological heritage on the site of the proposed development, to assess the impact the development may have on this resource, and to make recommendations as to how this impact might be mitigated.

1.1. Legal Requirements

This report forms part of the Environmental Impact Assessment for the Peddie Photovoltaic (PV) Facility and complies with the requirements for the South African National Heritage Resource Act No 25 of 1999. In accordance with Section 38 (Heritage Resources Management), a Heritage Impact Assessment (HIA) is required to assess any potential impacts to palaeontological heritage within the development footprint of the Peddie Wind Energy Facility Project.

Categories of heritage resources recognised as part of the National Estate in Section 3 of the Heritage Resources Act, and which therefore fall under its protection, include:

- geological sites of scientific or cultural importance;
- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens; and
- objects with the potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.

2. PROPOSED DEVELOPMENT DESCRIPTION

InnoWind (Pty) Ltd, a French renewable energy generator that develops, finances, builds, operates and maintains commercial alternative energy generation facilities, plans to develop 4 photovoltaic electricity generation facilities on the farms Van Wyksvlei Settlement F30, Spitzkop F51, Kelham F31 and Communal Land, located on the western side of the R345 approximately 7 km north of Peddie Town in the Eastern Cape (Figure 2.1). The proposed photovoltaic parks are anticipated to produce up to 19 MW of electricity. The installations' footprints are approximately: i) PV 1 - 64ha; ii) PV 2 - 51ha; iii) PV 3 - 44ha; and PV 4 - 45ha.

An individual PV module is made of layers of amorphous silicone, which acts as a semi-conductor. When light shines on the cell it creates an electric field across the layers, causing electricity to flow. Higher light intensity will increase the flow of electricity. This charge is discharged via the module's transparent conductive front layer and metallic rear layer. The direct current generated within the module is fed into the electrical grid via an inverter. The PV modules are 5.7m2 (2.6 x 2.2m) in size, and comprise four panels. Each module is mounted on a metal supporting structure, no more than 1m off the ground, and has a potential output of 380W. There are a number of options regarding the structures and their anchoring to the ground. Typically this is done by means of a small concrete "foot" at the base of the pole supporting the structure

A typical photovoltaic facility consist of modules that is organised into groups of 1 MW (approximately 1.5 ha), with each group connected to a "group station" (a cabin of approximately 2.5 x 4 m containing transformers and inverters). Each "group station" is then connected with a "main station" of approximately the same size, which is connected to an Eskom substation via an underground power line.

It is also proposed that each of the PV parks be fenced for security reasons. A small control cabin will be built at the entrance to each park.

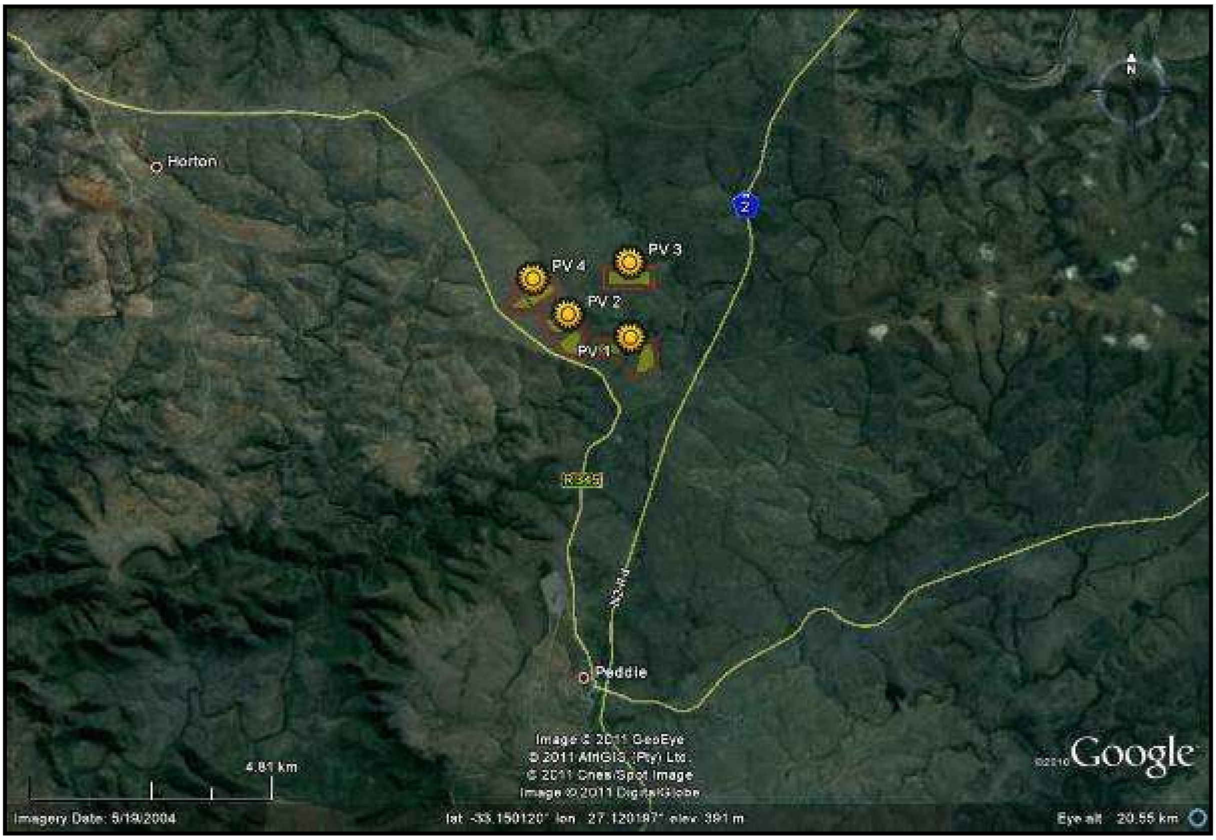

Figure 2.1 Location and Indicative Layout of the Proposed Peddie Photovoltaic Facilities

3. AIMS AND METHODS

After discussions with CES a request for a Phase 1 Palaeontological Impact Assessment (PIA) was received. Following the *"SAHRA APM Guidelines: Minimum Standards for the Archaeological & Palaeontological Components of Impact Assessment Reports"* the aims of the PIA were:

- identifying exposed and subsurface rock formations that are considered to be palaeontologically significant;
- assessing the level of palaeontological significance of these formations;
- conducting fieldwork to assess the immediate risk to exposed fossils as well as to document and sample these localities;
- commenting on the impact of the development on these exposed and/or potential fossil resources;
- making recommendations as to how the developer should conserve or mitigate damage to these resources.

A basic assessment of the topography and geology of the area was made by using appropriate geological (1:250 000) maps in conjunction with Google Earth. The only limitation on this methodology is the scale of mapping, which restricts comparison of the geology to the 1:250 000 scale. This restriction only applies in areas where major changes in the geological character of the area occur over very short distances or on the geological transformation zones.

A review of the literature on the geological formations exposed at surface in the development site and the fossils that have been associated with these geological strata was undertaken.

A field investigation of the site was conducted on 19 September 2011 by Dr G Groenewald an experienced fieldworker. The aims of the fieldwork were to document any exposed fossil material and to assess the palaeontological potential of the region in terms of the type and extent of rock outcrop in the area.

4. GEOLOGY OF THE AREA

The Amatola area consists predominantly of the Beaufort Group of the Karoo Supergroup. The Beaufort Group consists of the Adelaide Subgroup that lies between the coast and the Amatola Mountains. The Adelaide Subgroup comprises out of the Koonap, Middelton and Balfour Formations. The Tarkastad subgroup overlays the Adelaide subgroup between the Amatola Mountains and the Stormberg and Drakensberg ranges.

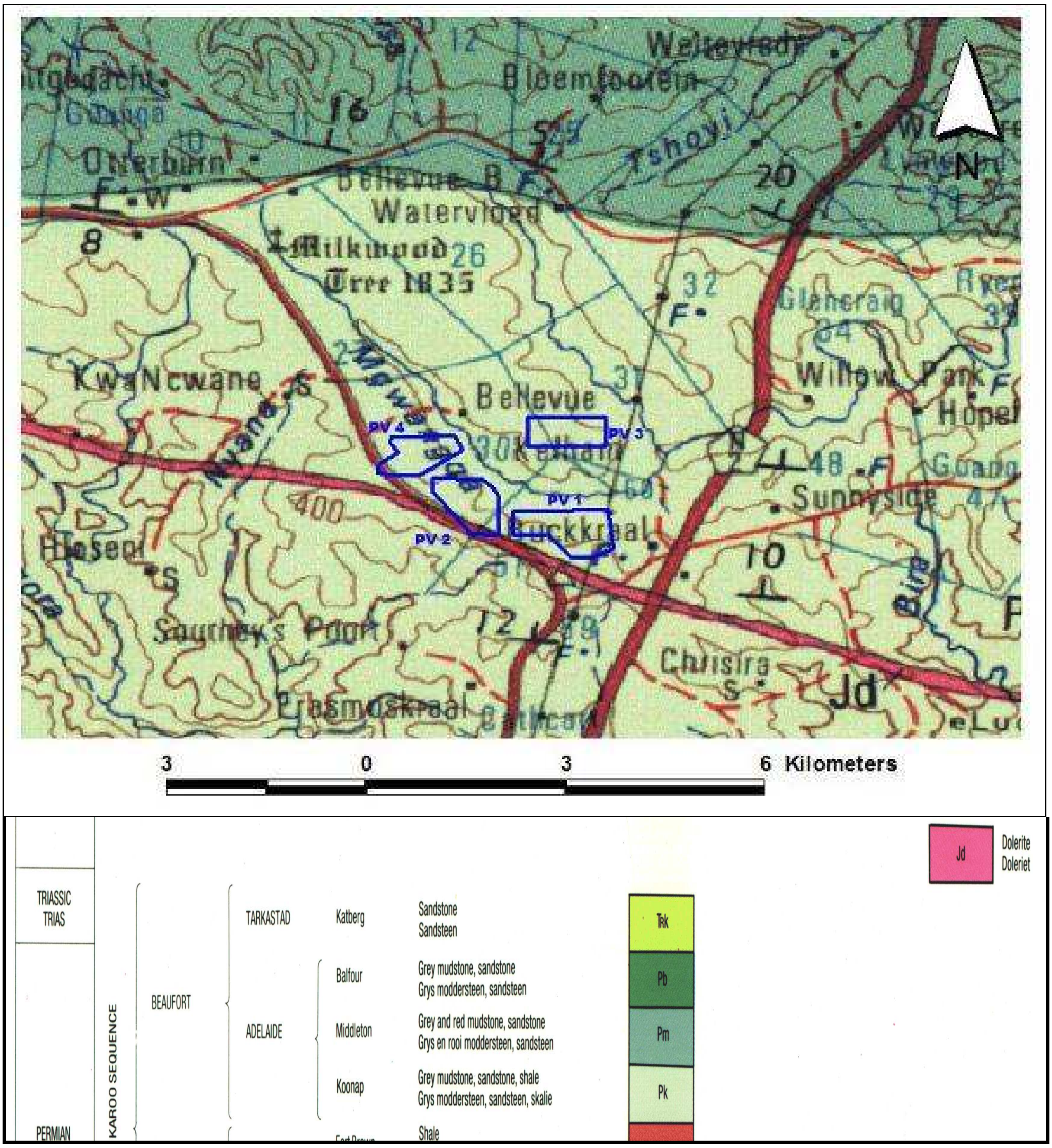

Figure 4.1 The Geology (Geo Map 3326- Grahamstown) of the Peddie Photovoltaic Facilities

The study area is underlain by the Permian Koonap Formation of the Adelaide Subgroup (shale, grey mudstones and sandstones) as illustrated in Figure 4.1. Soils are derived from the underlying rock and are generally shallow and low in fertility.

4.1. The Koonap Formation

Mason (2007) describes the Koonap Formation as a fluvial depositional environment due to the presence of upward-fining cycles, which are considered to be a distinctive fluvial feature. Vertically orientated skew planes and pedogenic carbonate layers are present in the mudstones of the Koonap Formation and these features are unique to fluvial overbank environments. These features, in conjunction with the presence of terrestrial fossils and absence of marine fossils, indicate that the Koonap Formation was deposited in a subaerial environment.

The Koonap Formation is interpreted as transitional brackish lacustrine to fluvial greenish grey fine-grained sandstone grading upwards into fine-grained siltstone and mudstone.

5. PALAEONTOLOGY OF THE AREA

5.1. The Koonap Formation

Outcrops of the grey mudstone, present in the shallow borrow pits and in outcrops associated with road cuttings, are remnants of the Koonap Formation which is associated with the *Eodicynodon* and *Tapinocephalus* assemblage zones (Rubidge, ed, 1995; Johnson et al, 2006).

A wide diversity of fossil tetrapods have been recovered from the Koonap Formation and include R*hinesuchid amphibians, Tapinocephalid dinocephalians, Therocephailians, Dicynodonts* and the parareptiles *Eunotosaurus* and *Broomia*. These fossils reveal that the upper *Tapinocephalus* and/or *Pristerognathus* Assemblage Zones are present in the Koonap Formation in the study area (Mason, 2007).

The excavations for the foundations of the PV modules as well as the roads and other infrastructure may provide an opportunity to inspect fresh, unweathered rock of this assemblage zone in the study area.

6. FIELD INVESTIGATION

The development area is dominated by rolling hill topography (Figure 6.1). The placements of proposed PV modules are mainly on the upper slopes. Outcrops of the Koonap Formations are restricted to road cuttings outcrops that are exposed during road construction.

Field investigations confirmed that very few outcrops of potential fossil-rich mudstone beds are present in the study area. The absence of fossils in the few outcrops examined should not be seen as an indication of the general absence of fossils from these beds, as fossils can be concentrated in specific rock units over very short distances.

7. PALAEONTOLOGICAL SIGNIFICANCE AND RATING

The predicted palaeontological impact of the development is based on the initial mapping assessment and literature reviews as well as information gathered during the field investigation.

The palaeontological significance and rating is summarised in Table 7.1 and 7.2. For the methodology and definitions of impact rating and significance see Appendix A (CES 2011).

Figure 7.1 Rolling Hill Topography Underlain by Koonap Mudstone (S33.09411; E27.07804)

Table 7.1 Palaeontological Significance of Geological Units on Site

Geological Unit	Rock Type and Age	Fossil Heritage	Vertebrate Biozone	Palaeontological Sensitivity
Koonap Formation	Grey Mudstone, Sandstone and Shale PERMIAN	Vertebtate fossils of *Eodicynodon* and *Tapinocephalus.* Plant fossils also recorded	*Eodicynodon* and *Tapinocephalus* assemblage zone	High sensitivity

Table 7.2 Significance Rating Table as Per CES Template

Rock Unit	Temporal Scale (duration of impact)	Spatial Scale (area in which impact will have an effect)	Degree of confidence (confidence with which one has predicted the significance of an impact)	Impact severity (severity of negative impacts, or how beneficial positive impacts would be)		Overall Significance (The combination of all the other criteria as an overall significance)	
				With mitigation	Without mitigation	With mitigation	Without mitigation
Koonap Formation	permanent	international	possible	beneficial	very severe	beneficial	high negative

There is a possibility that fossils could be encountered during excavation of bedrock within the development footprint and these fossils would be of international significance. If effective mitigation measures are in place at the time of exposure, and the fossils are successfully excavated for study, this would represent a beneficial palaeontological impact.

Unfortunately within the Koonap Formation, there is no way of assessing the likelihood of encountering fossils during excavation. As evidenced in other similar areas with exposures, fossils were apparently absent or very scarce over large areas but locally dense accumulations were found.

Therefore, fossils within the development site could be characterised as rare but highly significant. The damage and/or loss of these fossils due to inadequate mitigation would be a highly negative palaeontological impact. However, the exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) to a qualified palaeontologist for excavation will be a beneficial palaeontological impact.

8. PALAEONTOLOGICAL IMPACT AND MITIGATION

The predicted palaeontological impact of the development is based on the initial mapping assessment and literature reviews as well as information gathered during the field investigation. The field investigation confirms that the area is underlain by the Koonap Formation.

The Koonap Formation is interbedded mud- and siltstone that do have potential to yield fossils. The excavation of foundations as well as access roads to the various PV modules on the slopes will have the potential to uncover the mud rock and sandstone of the Koonap Formation. Therefore monitoring and mitigation in terms of the palaeontological heritage are required.

The following colour coding method was developed to classify a development area's palaeontological impact as illustrated in Figure 8.1:

- Red colouration indicates a very high possibility of finding fossils of a specific assemblage zone. Fossils will most probably be present in all outcrops on the site/route and the chances of finding fossils during the construction phase are very high.
- Orange colouration indicates a possibility of finding fossils of a specific assemblage zone either in outcrops or in bedrock on the site/route.
- Green colouration indicates that there is no possibility of finding fossils in that section of the site/route development.

The proposed development involves the installation of PV modules and infrastructure such as roads and buildings. The construction phase will require excavation of bedrock and has the potential to impact directly on fossil heritage if the Koonap Formation mudstone is exposed. From Figure 8.1 the following mitigation measures are recommended:

Table 8.1 Site Specific Mitigation Measures

Colour Coding (Figure 8.1)	**Mitigation Recommended**
Orange Sites	All earth-moving activities with potential impact are to be monitored by a palaeontologist. A monitoring report should be submitted to SAHRA after completion of the earth-moving activities. The resident ECO must be trained by a professional palaeontologist in the recognition of fossils. If fossil material is later discovered it must be appropriately protected and the discovery reported to a palaeontologist for the removal thereof as per SAHRA legislation

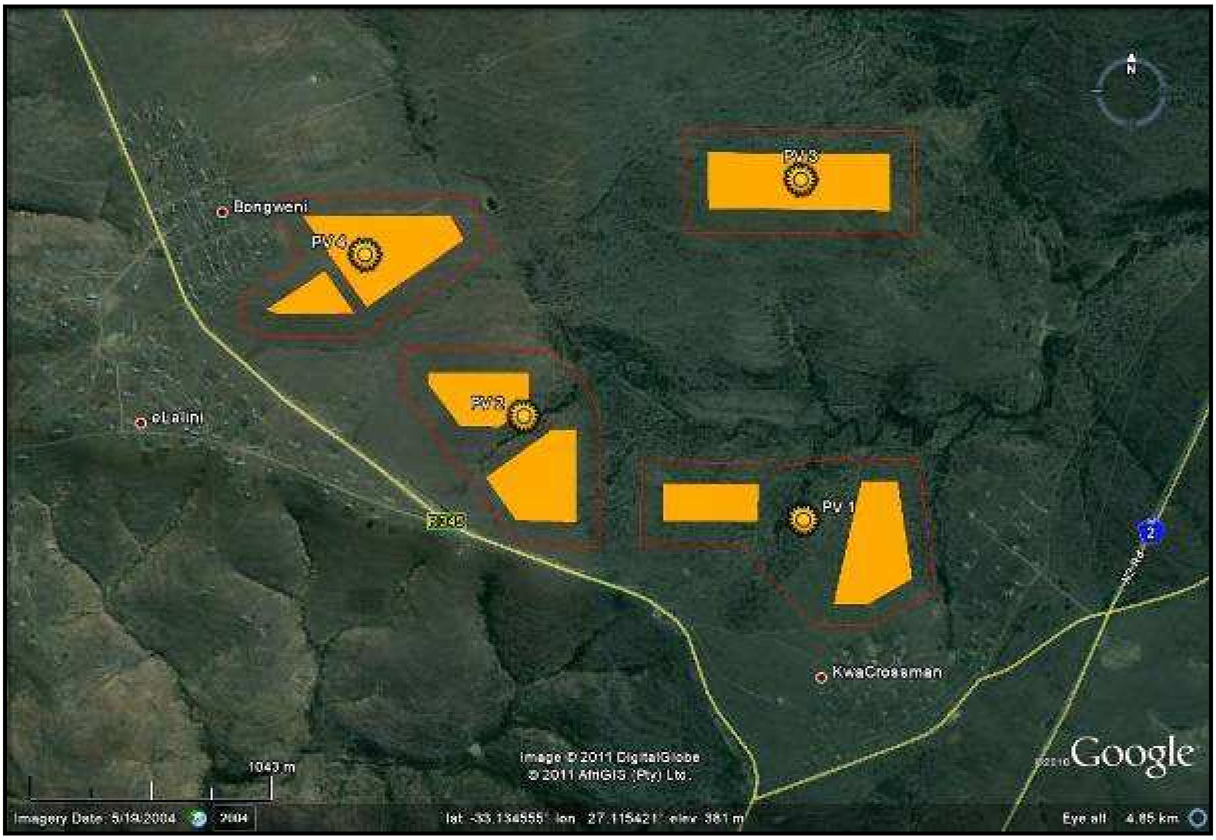

Figure 8.1 Palaeontological Impact of the Proposed Peddie Wind Energy Facility

9. CONCLUSION

The development site for the Peddie Photovoltaic Facility is underlain by the Permian Koonap Formation, with outcrops limited to road cutting sites. There is a high potential for fossil material in the underlying mudstones that could be uncovered during excavations.

The outcrop areas of the Koonap Formation of the development site have a high palaeontological sensitivity rating. Through adequate monitoring and mitigation measures during excavations the high impact severity can be lowered to beneficial. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) to a qualified palaeontologist for excavation will have a beneficial palaeontological impact.

It is recommended that:

- A permit for the collection and rescue of fossils from the Koonap Formation must be obtained from SAHRA.
- All earth-moving activities with potential impact are to be monitored by a palaeontologist. A monitoring report should be submitted to SAHRA after completion of the earth-moving activities.
- The resident ECO must also be trained by a professional palaeontologist in the recognition of fossils. If fossil material is later discovered it must be appropriately protected and the discovery reported to a palaeontologist for the removal thereof as per SAHRA legislation.

10. REFERENCES

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McCarthy, T. and Rubidge, B.S. 2005. The Story of Earth and Life. Struik Publishers, Cape T

Mason, R. 2007. A Bio-and Litho- Stratigraphic Study of the Ecca-Beaufort Contact in the Southeastern Karoo Basin (Albany District, Eastern Cape Province). MSc Thesis, University of the Witwatersrand.

Rubidge, B.S. (Ed.). 1995. Biostratigraphy of the Beaufort Group (Karoo Supergroup). SACS Biostratigraphic Series, vol. 1.

11. QUALIFICATIONS AND EXPERIENCE OF THE AUTHOR

Dr Gideon Groenewald has a PhD in Geology from the Nelson Mandela Metropolitan University (1996) and the National Diploma in Nature Conservation from the University of South Africa (1990). He specialises in research on South African Permian and Triassic sedimentology and macrofossils with an interest in biostratigraphy, and palaeoecological aspects. He has extensive experience in the locating of fossil material in the Karoo Supergroup and has more than 20 years of experience in locating, collecting and curating fossils, including exploration field trips in search of new localities in the southern, western, eastern and north-eastern parts of the country. His publication record includes multiple articles in internationally recognized journals. Dr Groenewald is accredited by the Palaeontological Society of Southern Africa (society member for 25 years).

Declaration of Independence

I, Gideon Groenewald, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of palaeontological heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.

Dr Gideon Groenewald
Geologist

12. APPENDIX A - METHODOLOGY FOR ASSESSING THE SIGNIFICANCE OF IMPACTS

Although specialists will be given relatively free rein on how they conduct their research and obtain information, they will be required to provide their reports to the EAP in a specific layout and structure, so that a uniform specialist report volume can be produced.

To ensure a direct comparison between various specialist studies, a standard rating scale has been defined and will be used to assess and quantify the identified impacts. This is necessary since impacts have a number of parameters that need to be assessed. Four factors need to be considered when assessing the significance of impacts, namely:

1. Relationship of the impact to **temporal** scales - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.

2. Relationship of the impact to **spatial** scales - the spatial scale defines the physical extent of the impact.

3. The severity of the impact - the **severity/beneficial** scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system (for ecological impacts) or a particular affected party.

   The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is when nothing is done about it. The word 'mitigation' means not just 'compensation', but also the ideas of containment and remedy. For beneficial impacts, optimization means anything that can enhance the benefits. However, mitigation or optimization must be practical, technically feasible and economically viable.

4. The **likelihood** of the impact occurs - the likelihood of impacts taking place as a result of project actions differs between potential impacts. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident), and may or may not result from the proposed development. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.

The ***environmental significance*** scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.

Negative impacts that are ranked as being of "**VERY HIGH**" and "**HIGH**" significance will be investigated further to determine how the impact can be minimised or what alternative activities or mitigation measures can be implemented. These impacts may also assist decision makers i.e. lots of **HIGH** negative impacts may bring about a negative decision.

For impacts identified as having a negative impact of "**MODERATE**" significance, it is standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigations measures will then be proposed.

For impacts ranked as "**LOW**" significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

Table 9-1: Criterion used to rate the significance of an impact

Significance Rating Table	
Temporal Scale (The duration of the impact)	
Short term	Less than 5 years (Many construction phase impacts are of a short duration)
Medium term	Between 5 and 20 years
Long term	Between 20 and 40 years (From a human perspective almost permanent).
Permanent	Over 40 years or resulting in a permanent and lasting change that will always be there
Spatial Scale (The area in which any impact will have an affect)	
Individual	Impacts affect an individual.
Localised	Impacts affect a small area, often only a portion of the project area.
Project Level	Impacts affect the entire project area.
Surrounding Areas	Impacts that affect the area surrounding the development
Municipal	Impacts affect either the Local Municipality, or any towns within them.
Regional	Impacts affect the wider district municipality or the province as a whole.
National	Impacts affect the entire country.
International/Global	Impacts affect other countries or have a global influence.
Will definitely occur	Impacts will definitely occur.
Degree of Confidence or Certainty (The confidence to predicted the significance of an impact)	
Definite	More than 90% sure of a particular fact. Should have substantial supportive data.
Probable	Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or of the likelihood of an impact occurring.

Table 9-2: The severity rating scale

Impact severity (The severity of negative impacts, or how beneficial positive impacts would be on a particular affected system or party)	
Very severe	**Very beneficial**
An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated. For example the permanent loss of land.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit. For example the vast improvement of sewage effluent quality.
Severe	**Beneficial**
Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these. For example, the clearing of forest vegetation.	A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example an increase in the local economy.
Moderately severe	**Moderately beneficial**
Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated. For example constructing the sewage treatment facility where there was vegetation with a low conservation value.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example a 'slight' improvement in sewage effluent quality.
Slight	**Slightly beneficial**
Medium or short term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary. For example a temporary fluctuation in the water table due to water abstraction.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect	**Don't know/Can't know**
The system(s) or party(ies) is not affected by the proposed development.	In certain cases it may not be possible to determine the severity of an impact

Table 3: Overall significance appraisal

<table>
<tr><td colspan="2">Overall Significance (The combination of all the above criteria as an overall significance)</td></tr>
<tr><td>VERY HIGH NEGATIVE</td><td>VERY BENEFICIAL</td></tr>
<tr><td colspan="2">These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.
Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.
Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.</td></tr>
<tr><td>HIGH NEGATIVE</td><td>BENEFICIAL</td></tr>
<tr><td colspan="2">These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.
Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.
Example: The change to soil conditions will impact the natural system, and the impact on affected parties (such as people growing crops in the soil) would be HIGH.</td></tr>
<tr><td>MODERATE NEGATIVE</td><td>SOME BENEFITS</td></tr>
<tr><td colspan="2">These impacts will usually result in medium to long term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.
Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.</td></tr>
<tr><td>LOW NEGATIVE</td><td>FEW BENEFITS</td></tr>
<tr><td colspan="2">These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.
Example: The temporary change in the water table of a wetland habitat, as these systems is adapted to fluctuating water levels.
Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.</td></tr>
<tr><td colspan="2">NO SIGNIFICANCE</td></tr>
<tr><td colspan="2">There are no primary or secondary effects at all that are important to scientists or the public.
Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.</td></tr>
<tr><td colspan="2">DON'T KNOW</td></tr>
<tr><td colspan="2">In certain cases it may not be possible to determine the significance of an impact. For example, the significance of the primary or secondary impacts on the social or natural environment given the available information.
Example: The effect of a particular development on people's psychological perspective of the environment.</td></tr>
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